F-2700 and F-1500 Series Insertion Meters

Installation Hardware Instructions

For Welded Steel Pipe

For Use with Kits: INSTL201S-FMH & INSTL203S-FMH

Note: Please read entire manual before installing the flow meter.

This kit can be installed during a system shutdown or on a pressurized pipe. Once installed, this kit allows for insertion and removal of the flow meter without a system shutdown. For installations on a pressurized pipe, a hot tap drilling machine is used to create a 2" opening in the pipe wall.

IMPORTANT NOTE

ONICON insertion flow meters are precision measuring devices that must be installed according to the instructions contained in this document in order to maintain their accuracy and reliability. Failure to follow these instructions will result in erratic operation and reduced accuracy.

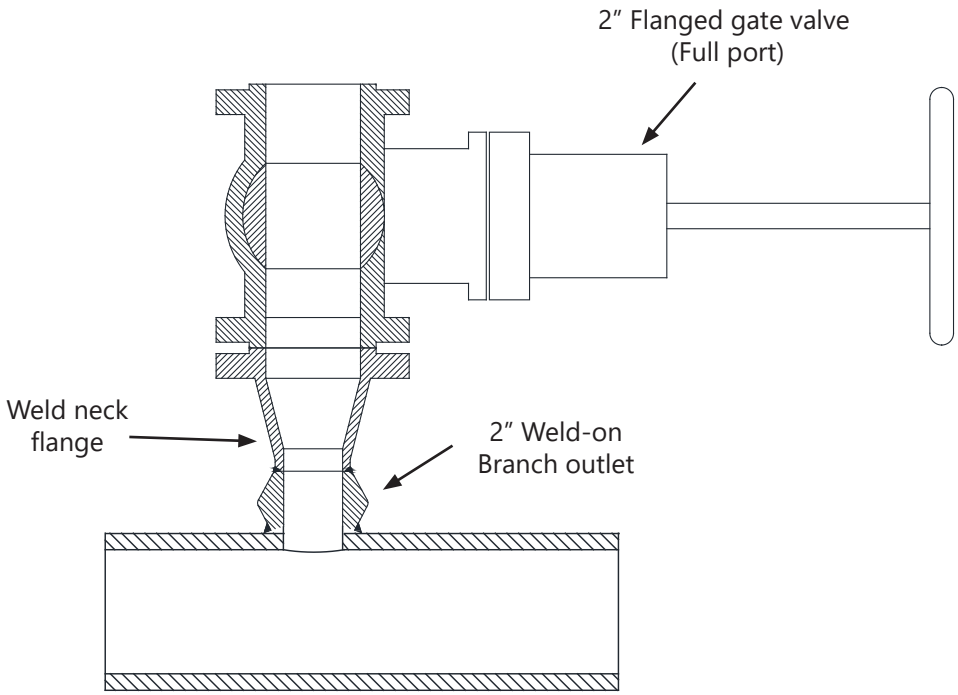
Directions for installation during system shutdown

1. Identify an appropriate location for the flow meter.
2. Turn off the flow and verify that the line is not pressurized.
3. Use a cutting torch or sharp cutting tool to tap into the pipe. The pipe opening must be at least 1.875" in diameter.
4. Remove all burrs and rough edges from the hole. Rough edges may affect flow meter accuracy or damage the sensor assembly when inserting the meter into the pipe.
5. After cutting, measure the thickness of the cut-out and record this number for calculating the insertion depth when installing the flow meter.
6. Weld the 2" butt weld branch outlet onto the pipe. Make sure this connection is within ±5°F of being perpendicular to the pipe centerline.
7. Weld the 2" weld neck flange to the branch outlet.
8. Connect the 2" gate valve to the weld neck flange. The valve's full open bore must be at least 1.875" in diameter.
9. Flush, pressurize and leak test the system.

Directions for installation in a pressurized system

1. Identify an appropriate location for the flow meter.
2. Weld the 2" butt weld branch outlet onto the pipe making sure the outlet is within ±5°F of being perpendicular to the pipe centerline.
3. Weld the 2" weld neck flange to the branch outlet.
4. Connect the 2" gate valve to the weld neck flange. The valve's full open bore must be at least 1.875" in diameter.
5. Run a static pressure check on the welds. If pressure loss or leaks are detected, repair the joint and re-test.
6. Use a hot tap drilling machine to create the access hole in the pipe. The access hole must be at least 1.875" in diameter.
7. Remove the drill and clear all debris out of the valve.

Installation Kit Components



Evaluating Upstream Piping Conditions

Better

Straight Pipe
Single Bend
Pipe Reduction or Enlargement
Outflowing Tees
Multiple Bends in Same Plane
Multiple Bends Out of Plane
Inflowing Tees
Pressure Reducing Valve

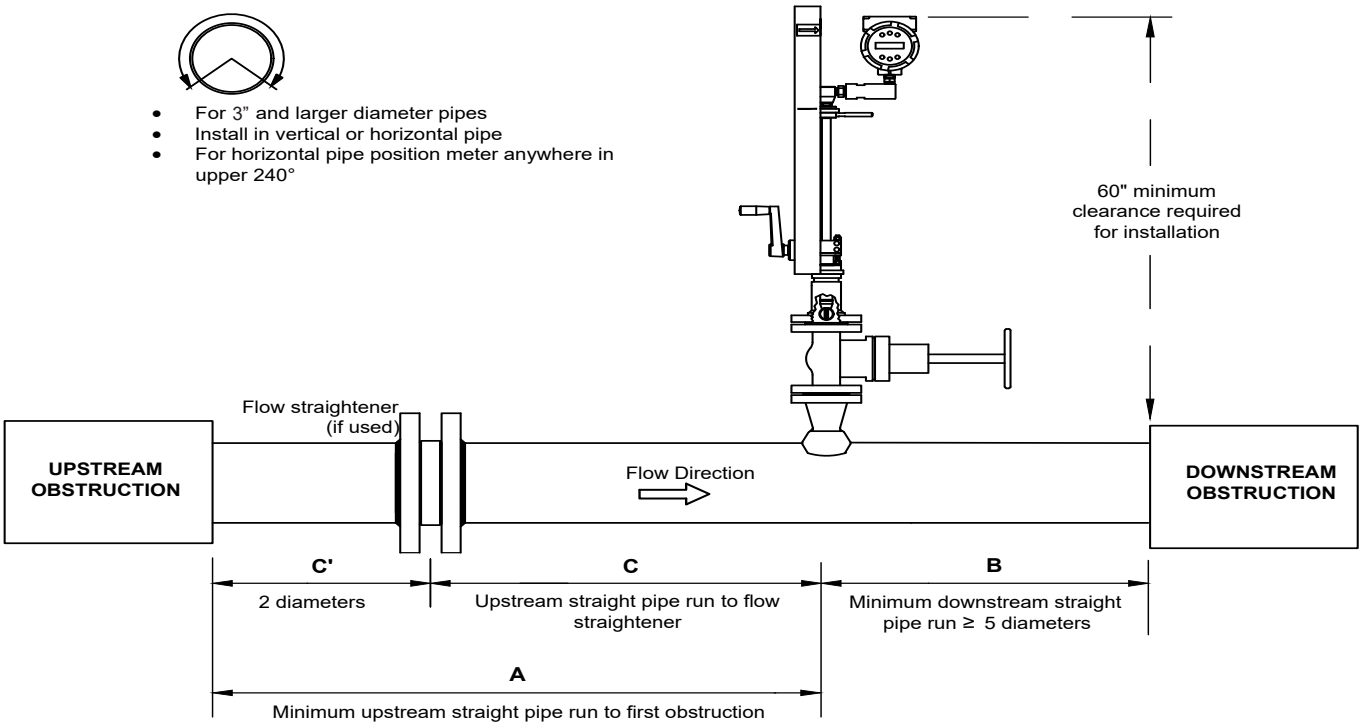
Worse

How to determine the available straight pipe diameters:

For each application, locate the longest straight, unobstructed section of pipe (no bends, tees, valves, other insertion probes, size transitions, etc.). The longest straight pipe run in inches divided by normal pipe size in inches equals "diameters of straight pipe." For closed loop applications, consider both the supply and return lines as possible locations.

Unobstructed Flow Requirements

Select an installation site that will minimize possible distortion in the flow profile. Valves, elbows, control valves and other piping components may cause flow disturbances. Check your specific piping condition against the examples shown below. In order to achieve accurate and repeatable performance, install the flow meter using at least the recommended number of straight run pipe diameters upstream and downstream of the sensor. Details shown on next page.



NOTE: For liquid applications in vertical pipes, avoid installing with flow in the downward direction because the pipe may not be full at all points. Choose to install the meter with flow in the upward direction, if possible.

F-2700 & F-1500 Series Insertion Meters

Installation Hardware Instructions

ONICON
Flow and Energy Measurement

Recommended Pipe Length Requirements for Installation

Minimum Required Upstream Diameters					Minimum Required Downstream Diameters	
Example	No Flow Straightener	With Flow Straightener			No Flow Straightener	With Flow Straightener
	A	A	C	C′	B	B
Single (90°) elbow	10D	N/A	N/A	N/A	5D	5D
Two (90°) elbows in one plane	15D	10D	5D	5D	5D	5D
Two (90°) elbows out of plane*	30D	10D	5D	5D	10D	5D
Reduction before meter	10D	10D	5D	5D	5D	5D
Regulator or valve partially closed **	30D	10D	5D	5D	10D	5D
D = Internal diameter of channel. N/A = Not Applicable						

Notes
* If three 90° bends present, double recommended length
** If valve is always fully open, base length requirements on fitting directly preceding it

Always use the maximum available straight run. When more than the minimum required straight run is available, place the meter such that the excess straight run is upstream of the meter's location.